

# BUZZ NETWORK ON THE WEBLOG COMMUNITY

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Abstract: As we don't give priority to the mass media as trustful information, effective expansion of buzz (word-of-mouth) will be expected as an important marketing approach. It seems that some buzzes on the Internet spread by information on weblogs. Thus it is thought that a kind of buzz network is formed in weblog communities. It is important theme in our research to analyze the structure of the buzz network on the weblog communities and to find the hubs and the connectors on the network. We define a set of entries on a weblog as a 'Buzz-Node' and each buzz-node has a specific characteristic. 'Buzz-Hubs' and 'Buzz-Connectors' are the important weblogs that have the buzz-node connecting to many other buzz-nodes or that connect two or more clusters. Now we are developing the analysis system of buzz network for weblog communities called 'WeBz Analyzer' for finding the buzz-hubs and the buzz-connectors.

## 1 INTRODUCTION

We can easily touch vast and various information today, not only through TV and newspaper but also through the Internet. It is not easy for us to trust such information now, because we are surrounded by too much information. These days, we often check some web sites and are sometimes influenced with their information. The authors may not be famous even if Yahoo! or Google lists such websites in the high rank. We also refer to comments in the bulletin board and the recommendations on Amazon.com.

It becomes more and more important in recent years although word-of-mouth exists for a long time. When some hot topics are expanded by word-of-mouth, each of them is called 'Buzz'. Emanuel Rosen says that three reasons enhance the importance of buzz. First, we are exposed to information too much to process. Second, we doubt the advertisements. Third, we can share information easily with each other on the Internet. It is popular for us to access the buzzes especially on the Internet (Rosen, 2000).

## 2 BUZZ MARKETING

Our preferences are diversified and the scale of the group sharing a specific interest tends to become small. In addition, various advertisement-

distributing media increased enormously by the appearance of the Internet. Thus the importance of the media planning to reflect the intention of the advertisers effectively has increased (Takami et al., 2004). However, obtaining enough advertising effectiveness becomes difficult if only using the mass marketing in recent years.

As we don't give priority to the mass media as trustful information, effective expansion of word-of-mouth will be expected as an important marketing approach. That is called 'Buzz Marketing'. In buzz marketing, it is important to support the potential opinion leaders who can expand the reputation of some topics by word-of-mouth effectively (See Figure 1). And finding them and estimating the influence of advertising effectiveness by their

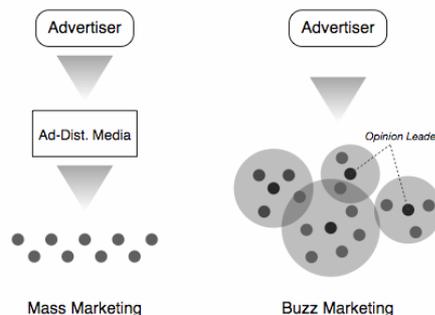


Figure 1: Marketing approaches.

contribution are the most critical theme.

### 3 BUZZ NETWORK ON THE NET

#### 3.1 Buzz Network

It is thought that people construct a kind of network that consists of the people who are interested in a specific topic and their friends. People who can expand some topics by word-of-mouth are called opinion leaders and they are regarded as the hubs of the network (See Figure 2). In such a network, the hubs can be evaluated on the following two aspects.

It is important for opinion leaders that they have a lot of acquaintances. So the hubs are the nodes that

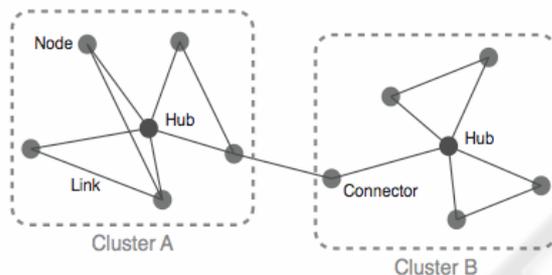


Figure 2: A structure of the Buzz Network.

have many links with other nodes. People who are similar to each other tend to form clusters. Then it may not spread outside the cluster though the topic spreads rapidly inside the cluster. The people who have links with different clusters are also important because some topics can spread by word-of-mouth to the people who are interested in them via the people who are not. The nodes that have a role of connecting two or more different clusters are called 'Connectors'.

When people who have some authority, we tend to trust or refer their information. We often willing to buy something which celebrities wear. Celebrities can be hubs in the network and they are called social hubs. Professionals who have the charisma in the specific area look like celebrities. We also trust or refer the information from the semi-professionals even if they are not so famous but we can feel that they are familiar. Some professionals also may be hubs in the network and they are called expert hubs.

#### 3.2 Buzz on the Internet

In recent years, we can talk about some topics and share some reputations on the Internet. More and

more products and services become famous by word-of-mouth on the Internet. Which means that buzzes are born and expanded on the Internet. So the Internet has the power to expand some topics by word-of-mouth and buzz marketing is effective on the Internet.

Advertising effectiveness by word-of-mouth has not been focused on as a research area because it is difficult to analyze the structure and estimate the influence. The objective in many researches is to find the hot topics on the Web and we can easily find the buzzes on the Internet as the contribution of such researches (Carter, 2005).

According to the report of Japan Advertisers Association Web Advertising Bureau, over 70% of writings are positive stance when a product is referred in weblogs. They analyzed about one million weblogs and found that there are a lot of weblogs that have suitable contents for advertisers but they have only a few readers. They say that it is profitable mechanism to inform such detailed and excellent weblogs for potential buyers (WAB, 2005).

Then we pay attention to weblogs as the potential media that can generate buzzes and expand them by word-of-mouth. A weblog consists of entries that are linked with other weblogs or web sites. Most weblogs have some categories and each category has entries about a specific topic. The connections with other weblogs are hyperlinks, trackbacks and comments (See Figure 3).

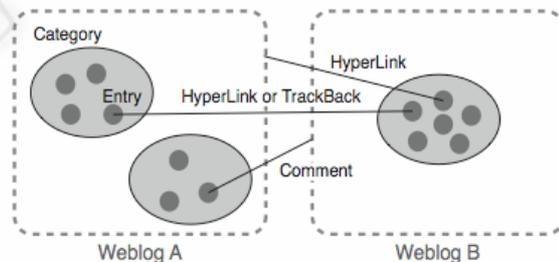


Figure 3: A structure of the Weblog Network.

## 4 BUZZ NETWORK AND WEBLOG COMMUNITY

### 4.1 Weblog Community

Many opinions are exchanged through the weblogs, and we are influenced with them. Generally, word-of-mouth spreads by people. But it seems that word-

of-mouth on the Internet spreads by information on weblogs. Thus some weblog groups can be regarded as buzz networks.

There are some famous and popular weblogs which authors are celebrities. They are linked with enormous other weblogs and some topics on their entries have strong influences on the Internet. It seems that celebrity's weblogs can be regarded as social hubs on buzz network. On the other hand, there are various professional weblogs which authors are specialists in each area. Such weblogs also have some trustful influence on many people in each specific area. They can be also regarded as expert hubs on buzz network. Thus, the weblog has the characteristic as the hubs on the buzz network now.

Obtaining some advertising effectiveness by supporting authors to take up a specific topic in their weblogs is practiced at Gawker as a new advertising strategy. Moreover, some researches consider the relation between the author and the readers by analyzing the comments on weblogs, and try to use the contribution for marketing (Glance et al., 2005).

#### 4.2 Buzz-Nodes and Buzz-Hubs

When buzz networks are formed in weblog communities, it is necessary to define the node and the link. Each entry of a weblog is used for criteria in most researches on weblogs. But in our research, we have to consider categories of weblogs because entries in each category share a specific topic and the characteristics of each category define the clusters. Then we define a set of entries in a category as a 'Buzz-Node'.

A weblog has some connections with each other. Hyperlinks are used to connect with other web sites or entries on other weblogs. Trackbacks, characteristic feature of weblog, show that an entry is referred by an entry of another weblog. Several entries have some comments from readers. Some of the readers who write comments have their own weblogs. So some comments on the weblogs can be regarded as a link from the commentator's weblogs. Thus we consider these three connections as links on buzz network.

A weblog consists of some buzz-nodes and has some links to other buzz-nodes. Each buzz-node has a specific characteristic (keyword) that is regarded as a characteristic of a cluster on the buzz network. Then we can consider such network structure as the buzz network. In a word, a weblog has some buzz-nodes and each buzz-node has a specific keyword

and buzz-nodes are linked with each other (See Figure 4).

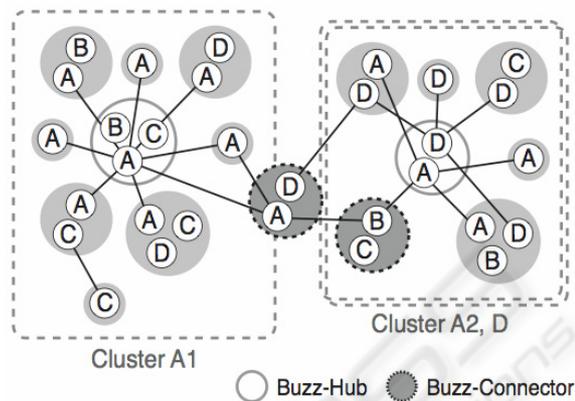


Figure 4: Buzz Network on the Weblog Community.

The characteristics of the buzz-nodes are evaluated by various methods. We can find the important keywords on the entry by analyzing the document. The name of category may be used for the keyword. Several approaches to find such keywords are proposed in many researches.

Some of the advertisements on the weblogs also can be used for characterizing them because there are advertisements automatically displayed suitable for each web site's characteristics. Then keywords can be extracted from such advertising contents or meta data of them. It is important to refer the advertisements actually displayed on weblogs because advertisers need to consider the compatibility with advertising topics on the weblogs. By extracting the keywords from advertisements, we can find some potential interests not only for the genre of topics but also for a specific product or service.

The hubs are important nodes on the buzz network. It is thought that such nodes have not only just many links but also many connections with similar characteristic nodes. In the weblog community, a 'Buzz-Hub' is not one of the buzz-nodes but an important weblog. So a buzz-hub may consist of some buzz-nodes. It is important for buzz-hubs to have the buzz-node connecting to many similar buzz-nodes. The buzz-hubs that have two or more such buzz-nodes are more important.

Furthermore, the connectors are also important in buzz marketing for expanding some topics by word-of-mouth even if the nodes are not hubs. On the buzz network, such nodes have a role of connecting two or more different clusters. It looks difficult to find such connectors on the buzz network by people. In the weblog community, we consider that a 'Buzz-

Connector' is the weblog that has two or more buzz-nodes and each buzz-node belongs to a different cluster. And the weblog is also buzz-connector that has the buzz-node connecting two or more similar clusters even if the characteristic of it is different from such clusters.

### 4.3 WeBz Analyzer

Now we are developing the analysis system of buzz network for weblog communities. We call buzz on the Web 'WeBz' and we named the system 'WeBz Analyzer'. WeBz Analyzer can find the buzz-hubs and buzz-connectors in weblog communities by analyzing the network structure of weblogs.

The system calculates the number of links with buzz-nodes that has a same or similar keyword, and it finds the clusters and priority order of buzz-nodes is shown. Similarly, it is done in the case of other keywords. Next, the system analyzes the links with the buzz-nodes that have different keywords. When the buzz-node connects similar or different clusters, Gaussian distribution defines the importance of the connections for buzz-connectors. Then the system calculates the total score in each buzz-node and it shows the important buzz-hubs and buzz-connectors.

## 5 RELATED WORKS

With the spread of the weblog, hot topics in the weblog community are often collected and analysed in some researches (Bar-Ilan, 2004). Technorati provides a real-time search engine that keeps track of what is going on in the blogosphere. We can find the ten words that got into the news most in 24 hours on weblogs at kizasi.jp. In the meaning of finding widespread buzzes, such services are interesting. But it is important in our research to find the potential web sites suitable for buzz marketing.

In the area of the next generation web search, some researchers try to rank websites by regarding two or more websites as a set (Yumoto and Tanaka, 2005). Yumoto and Tanaka propose the idea of 'multiple viewpoint retrieval' in web searches because there are websites that have been described from different viewpoints for a specific topic. We also plan to use a feature-vector based approach for characterising buzz-nodes.

## 6 CONCLUSION

Many researches try to find the hot topics on the Web and we can easily find some buzzes on the Internet as the contribution of them. But it is still difficult to analyze how buzzes are expanded and to estimate the advertising influences by word-of-mouth.

With the spread of Weblog, it seems that buzzes on the Internet spreads by the information on weblogs. Then we consider that weblog communities have a kind of buzz network. In our research, it is critical to find the buzz-hubs and buzz-connectors because those are the potential weblogs with the possibility of expanding buzzes.

We introduced the analysis system of buzz network for weblog communities called 'WeBz Analyzer'. Although we are still developing it, we hope that the system can simulate the advertising effectiveness by word-of-mouth on the Internet.

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